

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Atsushi ITO et al.

Application No.: New U.S. Patent Application

Filed: June 23, 2003

Docket No.: 116303

For: PROCESS OF MANUFACTURING NOZZLE PLATE FOR INK-JET PRINT HEAD

INFORMATION DISCLOSURE STATEMENT

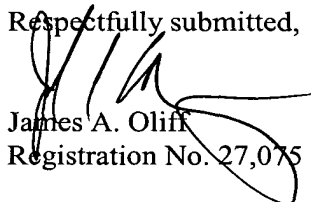
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Pursuant to 37 CFR §1.56, the attention of the Patent and Trademark Office is hereby directed to the references listed on the attached PTO-1449. Unless otherwise indicated herein, one copy of each reference is attached. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

- ☒ 1. This Information Disclosure Statement is being filed (a) within three months of the U.S. filing date of this non-CPA application, OR (b) before the mailing date of a first Office Action on the merits in the present application. No certification or fee is required.
- ☒ 2. Relevance of the non-English language references 1-3 is discussed in the present specification.
- ☒ 3. A concise explanation of the relevance of the non-English language references 4-9 appears in the Appendix attached hereto.
- ☒ 4. English-language Abstracts of the non-English language references 1-9 are attached hereto.
- ☒ 5. A computer-generated English translation of the following Japanese Patent Publication has been obtained from the website of the Japanese Patent Office ([<http://www.jpo.go.jp>]), and is attached, but has not been reviewed for accuracy. See References 1-9.

Respectfully submitted,

  
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Form PTO-1449 (REV. 8-83)		US Dept. of Commerce PATENT & TRADEMARK OFFICE		ATTY DOCKET NO. 116303		APPLICATION NO. New U.S. Patent Application	
INFORMATION DISCLOSURE STATEMENT  (Use several sheets if necessary)				APPLICANTS Atsushi ITO et al.			
				FILING DATE June 23, 2003			
U.S. PATENT DOCUMENTS							
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	
FOREIGN PATENT DOCUMENTS							
		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS	
	1	JP A 2000-289211 w/ abst & trans	10/17/2000	Japan			
	2	JP A 2001-18398 w/ abst & trans	01/23/2001	Japan			
	3	JP A 9-85956 w/ abst & trans	03/31/1997	Japan			
	4	JP A 2000-318163 w/ abst & trans	11/21/2000	Japan			
	5	JP A 5-338180 w/ abst & trans	12/21/1993	Japan			
	6	JP A 2001-310471 w/ abst & trans	11/06/2001	Japan			
	7	JP A 5-229127 w/ abst & trans	09/07/1993	Japan			
	8	JP A 2002-113529 w/ abst & trans	04/16/2002	Japan			
	9	JP B2 3063786 w/ abst & trans	05/12/2000	Japan			
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)							
EXAMINER					DATE CONSIDERED		
Examiner: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.							

Date: June 23, 2003

## CONCISE EXPLANATION UNDER RULE § 1.98

(1) **JP-A-2000-289211** (publication of unexamined Japanese Patent Application laid open in 2000)

A concise explanation of this document is given on pages 3-4 of the specification.

(2) **JP-A-2001-18398** (publication of unexamined Japanese Patent Application laid open in 2001)

A concise explanation of this document is given on page 4 of the specification.

(3) **JP-A-H09-85956** (publication of unexamined Japanese Patent Application laid open in 1997)

A concise explanation of this document is given on pages 4-5 of the specification.

(4) **JP-A-2000-318163** (publication of unexamined Japanese Patent Application laid open in 2000)

This document discloses a process of manufacturing a nozzle plate 5. The process includes: a step of forming a Ni plate 20 as a substrate in a plating operation such that the substrate 20 has a nozzle hole 20a; a step of forming an insulating layer 21 on an inside surface of the substrate 20 and an inner surface of the nozzle hole 20a; and a step of forming a water repellent layer 35 on an outside surface of the substrate 20 in a plating operation.

(5) **JP-A-H05-338180** (publication of unexamined Japanese Patent Application laid open in 1993)

This document discloses a process of manufacturing a nozzle plate. The process includes: a step of forming a water repellent layer 7 on an outside surface 6 of a substrate 4 made of a resin material; and a step of forming a hydrophilic oxide layer 9 on an inner surface 8 of the nozzle hole 5.

(6) **JP-A-2001-310471** (publication of unexamined Japanese Patent

Application laid open in 2001)

This document discloses a process of manufacturing a nozzle plate. The process includes: a step of forming a water repellent layer 6 on an outside surface 1a of a substrate 1 and on an inner surface of a small-diameter portion 2a of a nozzle hole 2; and a step of forming a hydrophilic layer 12 on an inside surface 1b of the substrate 1 and on an inner surface of a tapered portion 2b of the nozzle hole 2.

(7) JP-A-H05-229127 (publication of unexamined Japanese Patent Application laid open in 1993)

This document discloses a process of manufacturing a nozzle plate. The process includes: a step of forming a nozzle hole 2 through a substrate 1-a, by punching the substrate 1-a from an inside surface of the substrate 1-a toward an outside surface of the substrate 1-a; and a step of eliminating burrs 16, by grinding the outside surface of the substrate 1-a.

(8) JP-A-2002-113529 (publication of unexamined Japanese Patent Application laid open in 2002)

This document discloses a process of manufacturing a nozzle plate. . The process includes: a step of forming a taped portion 14a of a nozzle hole 14 in a substrate 64, by using a tapered punch 72; a step of planing an outside surface of the substrate 64, by using a cutting tool 9; and a step of forming a straight portion 14b of the nozzle hole 14, by using a cylindrical punch 71.

(9) JP-B2-3063786 (publication of Japanese Patent issued in 2000)

This document discloses a process of manufacturing a nozzle plate. . The process includes: a step of forming a nozzle hole through a substrate P, by using a punch 10, such that an annular projection R is formed on an inside surface of the substrate P so as to surround an opening of the nozzle hole.